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Aerospace series - Programme Management - Guide for the management of Systems Engineering

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Luft- und Raumfahrt - Programm-Management -
Leitfaden für das Management von Systemtechnik

This European Standard was approved by CEN on 11 November 2014.

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European foreword

This document (EN 9277:2015) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Introduction

This document aims to address the current challenges of the programmes that are:

— the multi projects approach,

— the multi-disciplinary approach,

— new methods of acquisition,

— the increasing complexity of systems to be acquired,

— the evolving aspects of the system and its incremental development,

— the complexity of the management of projects in terms of organization,

— the evolution of the industrial sectors.

In this document the system considered comprises a target system and elements (products, processes, etc.) needed for developing, producing and using it, in other words a range of end products and products supporting the lifecycle of the target system.

The case where the system is only an element of the service provided (no system is acquired, service only) is not adressed in this document.

Systems Engineering (SE) cover a set of activities which, based on a perceived operational need and via an organized approach, aims to:

— describe this need in technical terms,

— gradually transform it into a system solution,

— at each stage, demonstrate that this system is compliant with the need.

Systems Engineering:

— considers the system as a whole and in all situations of its lifecycle,

— provides a framework for combining various technical disciplines (electronics, data processing, mechanics, ergonomics, etc.) and some enterprise functions (design, production, logistics, tests, etc.) without necessarily intervening in these disciplines and functions,

— aims for the overall optimization of the solution in a field of constraints (costs, schedule, performance, strategy, etc.) established by the Programme management,

— guarantees consistency between all components of the solution (functional and physical interfaces).

In this document, the organisational dimension is essential to reach the overall objectives. The complexity of the system and the complexity of the organisation are correlate (the more complex the system is, the more control of the organisation is necessary).

Its position with respect to other normative documents handling Systems Engineering (ISO/IEC 15288, EIA 632,IEEE 1220, EN 9200) is represented in Annex A. This document falls within the scope of EN 9200 and ISO/IEC 15288, focusing on aspects linked to the management of the technical activities of SE with a higher level of detail. It relies partly on the SE process described in ISO/IEC

15288:2008 and if necessary with addition from EIA 632, adding the project phasing and scheduling aspect. It overlaps little with IEEE 1220 as such, which concentrates primarily on SE technical activities.

1 Scope

Based on the following considerations:

— reminder of Systems Engineering and its scope of application,

— positioning of SE management in Programme Management and in relation to Systems Engineering technical activities,

— identification of interfaces between SE management and the other disciplines linked to Programme Management,

the purpose of this standard is:

— to help the acquirer and the Organization to establish management requirements for SE activities,

— to help the supplier to construct the elements of the management plan (explain how to reply in particular to the management requirements).

This standard applies to the various levels of the product tree for the products that can be considered as systems:

— in the general case of an supplier which, with the help of one or more suppliers, develops a system on behalf of an acquirer,

— in the case of an integrated team (sharing of SE roles, responsibilities and risks).

NOTE   ISO/IEC/IEEE 24765:2010 integrated team should include organisation discipline and functions which have a stake in the success of the work products.

This standard constitutes a guide illustrating the requirements and possible responses for SE management. It can be used as a check-list which should be adapted or completed according to the specific context of each project.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 9200, *General recommendation for the project management specification*

EN 12973, *Value management*

EN ISO 9000:2005, *Quality management systems — Fundamentals and vocabulary (ISO 9000)*

ISO 9220, *Metallic coatings — Measurement of coating thickness — Scanning electron microscope method*

EN ISO 9241-210:2011, *Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems (ISO 9241)*

ISO/IEC 15288:2008, *Systems and software engineering — Systems life cycle processes*

ISO/IEC/IEEE 24765:2010, *Systems and software engineering — Vocabulary*

EIA 632:2003, *Processes for Engineering a System* [1]

IEEE 1220:2005, *Standard for Application and Management of the Systems Engineering Process* [2]

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

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[1]   EIA National (US) Electronic Industries Association http://www.eia.org/

[2]   IEEE International Institute of Electrical and Electronical Engineers http://www.ieee.org/